PATENT

META-ADDRESS ARCHITECTURE FOR PARALLEL, DYNAMICALLY RECONFIGURABLE COMPUTING

CROSS-REFERENCE TO RELATED APPLICATIONS

The present invention is a continuation-in-part application of U.S. Patent Application Serial No. 09/031,323, entitled "SYSTEM AND METHOD FOR DYNAMICALLY RECONFIGURABLE COMPUTING USING A PROCESSING UNIT HAVING CHANGEABLE INTERNAL HARDWARE ORGANIZATION," filed on February 26, 1998, which is a divisional application of U.S. Patent No. 5,794,062, filed on April 17, 1995. Now U.S. Patent 6,182,206,

BACKGROUND OF THE INVENTION

1. Field of the Invention

The present invention relates generally to computer architecture, and more particularly to systems and methods for reconfigurable computing. Still more particularly, the present invention is a system and method for scalable, parallel, dynamically reconfigurable computing.

2. Description of the Background Art

The evolution of computer architecture is driven by the need for ever-greater computational performance. Rapid, accurate solution of different types of computational problems typically requires different types of computational resources. For a given range of problem types, computational performance can be enhanced through the use of computational resources that have been specifically architected for the problem types under consideration. For example, the use of Digital Signal Processing (DSP) hardware in conjunction with a general-purpose computer can significantly enhance certain types of signal processing performance. In the event that a computer itself has been specifically architected for the problem types under consideration, computational performance will be further enhanced, or possibly even optimized relative to the available computational resources, for these particular problem types. Current parallel and massively-parallel computers, offering high performance for specific types of problems of $O(n^2)$ or greater complexity, provide examples in this case.

The need for greater computational performance must be balanced against the need to minimize system cost and the need to maximize system productivity in a widest-possible range of both current-day and possible future applications. In general, the incorporation of computational resources dedicated to a limited number of problem types into a computer system adversely affects system cost because specialized hardware is typically more expensive than